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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,809	10/30/2003	Richard G. Hoffman II	004578.1379	1299

45507 7590 03/07/2005

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EXAMINER	
ALSOMIRI, ISAM A	
ART UNIT	**PAPER NUMBER**
3662	

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,809	HOFFMAN, RICHARD G.	
	Examiner	Art Unit	
	Isam A Alsomiri	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Squire et al. US006057915A.

Referring to claims 1 and 13. Squire discloses in figure 1 a method comprising: transmitting 26 a defined beam of eye safe laser energy; receiving reflected energy from the beam; and analyzing information in the received energy so as to detect the presence of a moving projectile (see Abstract).

Referring to claims 2 and 14. Squire shows in figure 1the beam to have an azimuth angle and an elevation angle.

Referring to claims 3 and 15. Squire teaches selecting the azimuth angle to be 360 degrees (see col. 5 lines 14-16).

Referring to claims 4 and 16. Squire teaches selecting the elevation angle to be approximately 10 degrees (see col. 5 lines 22-23).

Referring to claims 5 and 17. Squire teaches the receiving includes directing the reflected energy onto a detector having at least two-dimensional array of detector elements, each the detector element receiving reflected energy from a respective different direction (see Abstract).

Referring to claims 6 and 18. It is inherent that Squire's analyzing unit includes the detecting a Doppler shift in the received energy to obtain (velocity and direction data).

Referring to claims 7 and 19. Squire teaches the receiving includes directing the reflected energy onto a detector having at least two-dimensional array of detector elements, each the detector element receiving reflected energy from a respective different direction (see Abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-12 and 20-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Squire et al. US006057915A. in view of Ruff et al. US006844924B2.

Referring to claims 8 and 20. Although Squire's system does not mention that the receiving unit includes directing onto the detector a reference beam (transmitted beam), so that

energy from the defined beam mixes with energy from the reference beam in each the detector element to produce sum and difference frequencies. It is well know to mix the transmit signal (reference signal) and the reflected signal to create sum of differences of the signals representative of the target objects (if not already inherent in Squire's system based on the figure 1 [28, 26, and 36]). Ruff teaches a self mixing detector which mixes the reflected signal with a reference signal [chirp signal] (see Abstract). It would have been obvious to modify Squire's system (if not already inherent) to include mixing the reflected signal with the receive signal which inherently produces the sum and differences of both signals to obtain mixed signals representative of the target object for easier processing.

Referring to claims 9 and 20. It is inherent that Squire's system includes supplying an output signal from each the detector element to a plurality of circuit portions which each perform at least one of filtering and fast Fourier transformation. However, even if Squire's system does not include the filtering and FFT steps, it is well known to include for clearer and better processing and detection. Ruff discloses in figure 4 the reflected signals goes into the filtering and FFT processing (see col. 1 lines 55-60). It would have been obvious to modify Squire's system to include the filtering and FFT steps for better processing and detection (S/N ration) of targets.

Referring to claims 10 and 22. Squire is silent about the defined beam to include chirp modulation. Ruff teaches using chirp modulation (see Abstract). It would have been obvious to modify Squire's system to include the chirp modulation because it gives good accuracy for time of flight measurements as it only correlates well at a single well defined time of arrival.

Additionally it can be detected when the received chirp level is well below the level of any random noise.

Referring to claims 11 and 23. It is inherent that Squire's system teaches modulation with a single frequency. However, even if Squire's system does not teach the single frequency; Ruff teaches the signal frequency (see Abstract). It would have been obvious to modify Squire's system to use a single frequency modulation based on the range of the target.

Referring to claims 12 and 24. As mentioned above (see rejection of claims 9 and 20), Ruff teach the reference beam (chirp modulation) which is equivalent to the defined beam (see Abstract).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited to (Feldman et al.; Taylor; Hand, JR) show various tracking system using optical sources.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isam A Alsomiri whose telephone number is 703-305-5702. The examiner can normally be reached on Monday-Thursday and every other Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isam Alsomiri

February 25, 2005

THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600